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CLAIMS:

1. A method of forming a thin film transistor relative to a substrate comprising the following steps:

providing a thin film transistor layer of polycrystalline material on a substrate, the polycrystalline material comprising grain boundaries;

providing a fluorine containing layer adjacent the polycrystalline thin film layer;

annealing the fluorine containing layer at a temperature and for a time period which in combination are effective to drive fluorine from the fluorine containing layer into the polycrystalline thin film layer and incorporate fluorine within the grain boundaries to passivate said grain boundaries; and

providing a transistor gate operatively adjacent the thin film transistor layer.

2. The method of forming a thin film transistor of claim 1 wherein the thin film transistor layer is provided before the fluorine containing layer is provided.

3. The method of forming a thin film transistor of claim 1 wherein the thin film transistor layer is provided after the fluorine containing layer is provided.

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4. The method of forming a thin film transistor of claim 1 wherein the fluorine containing layer predominately comprises WSi_x.

5. The method of forming a thin film transistor of claim 1 wherein the fluorine containing layer predominately comprises elemental W.

6. The method of forming a thin film transistor of claim 1 wherein the fluorine containing layer comprises W, and is deposited by chemical vapor deposition using WF_6 as a precursor.

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7. The method of forming a thin film transistor of claim 1 wherein the annealing temperature is from about 600℃ to about 1000℃.

8. The method of forming a thin film transistor of claim 1 wherein the annealing temperature is less than 700℃.

9. The method of forming a thin film transistor of claim 1 further comprising providing a buffering layer intermediate the thin film transistor layer and the fluorine containing layer, the buffering layer being transmissive of fluorine from the fluorine containing layer during the annealing step.

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10. The method of forming a thin film transistor of claim 1 further comprising providing a buffering layer intermediate the thin film transistor layer and the fluorine containing layer, the buffering layer being transmissive of fluorine from the fluorine containing layer during the annealing step, the buffering layer having a thickness of less than or equal to about 200 Angstroms.

11. A thin film transistor produced according to the process of claim 1.

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12. A method of forming a thin film transistor relative to a substrate comprising the following steps:

providing a thin film transistor layer of polycrystalline material on a substrate, the polycrystalline material comprising grain boundaries;

providing a sacrificial fluorine containing layer over the polycrystalline thin film layer;

annealing the fluorine containing layer at a temperature and for a time period which in combination are effective to drive fluorine from the fluorine containing layer into the polycrystalline thin film layer and incorporate fluorine within the grain boundaries to passivate said grain boundaries;

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after annealing, etching the sacrificial layer from the polycrystalline thin film layer; and

providing a gate dielectric layer and a gate relative to the passivated polycrystalline thin film layer.

13. The method of forming a thin film transistor of claim 12 wherein the gate dielectric layer and gate are provided after etching the sacrificial layer.

14. The method of forming a thin film transistor of claim 12 wherein the gate dielectric layer and gate are provided before etching the sacrificial layer.

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15. The method of forming a thin film transistor of claim 12 wherein the gate dielectric layer and gate are provided before providing the sacrificial layer.

16. The method of forming a thin film transistor of claim 12 wherein the fluorine containing layer predominately comprises WSi_x.

17. The method of forming a thin film transistor of claim 12 wherein the fluorine containing layer predominately comprises elemental W.

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18. The method of forming a thin film transistor of claim 12 wherein the fluorine containing layer comprises W, and is deposited by chemical vapor deposition using WF_6 as a precursor.

19. The method of forming a thin film transistor of claim 12 wherein the annealing temperature is from about 600℃ to about 1000℃.

20. The method of forming a thin film transistor of claim 12 wherein the annealing temperature is less than 700℃.

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21. The method of forming a thin film transistor of claim 12 further comprising providing a buffering layer intermediate the thin film transistor layer and the fluorine containing layer, the buffering layer being transmissive of fluorine from the fluorine containing layer during the annealing step, the method further comprising etching the buffering layer from outwardly of the polycrystalline thin film layer after the step of etching the fluorine containing layer.

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22. The method of forming a thin film transistor of claim 12 further comprising providing a buffering layer intermediate the thin film transistor layer and the fluorine containing layer, the buffering layer being transmissive of fluorine from the fluorine containing layer during the annealing step, the buffering layer having a thickness of less than or equal to about 200 Angstroms, the method further comprising etching the buffering layer from outwardly of the polycrystalline thin film layer after the step of etching the fluorine containing layer.

23. A thin film transistor produced according to the process of claim 12.

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24. A method of forming a thin film transistor relative to a substrate comprising the following steps:

providing a thin film transistor layer of polycrystalline material on a substrate, the polycrystalline material comprising grain boundaries;

providing a fluorine containing layer adjacent the polycrystalline thin film layer; and

annealing the fluorine containing layer at a temperature sufficiently high to drive fluorine from the fluorine containing layer into the polycrystalline thin film layer and incorporate fluorine within the grain boundaries to passivate said grain boundaries but sufficiently low to prevent chemical reaction of the fluorine containing layer with the polycrystalline thin film layer.

25. The method of forming a thin film transistor of claim 24 wherein the thin film transistor layer is provided before the fluorine containing layer is provided.

26. The method of forming a thin film transistor of claim 24 wherein the thin film transistor layer is provided after the fluorine containing layer is provided.

27. The method of forming a thin film transistor of claim 24 wherein the fluorine containing layer predominately comprises WSi_x.

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28. The method of forming a thin film transistor of claim 24 wherein the fluorine containing layer predominately comprises elemental W.

29. The method of forming a thin film transistor of claim 24 wherein the fluorine containing layer comprises W, and is deposited by chemical vapor deposition using WF_6 as a precursor.

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30. The method of forming a thin film transistor of claim 24 wherein the annealing temperature is less than 700°C.

31. The method of forming a thin film transistor of claim 24 further comprising providing a buffering layer intermediate the thin film transistor layer and the fluorine containing layer, the buffering layer being transmissive of fluorine from the fluorine containing layer during the annealing step, the buffering layer having a thickness of less than or equal to about 200 Angstroms.

32. A thin film transistor produced according to the process of claim 24.

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